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The Effect of Aerobic and Anaerobic Exercises in Some Functional Variables during Effort for Short- and Long-Distance Runners

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1. INTRODUCTION

The development in various sports events is the result of scientific studies and research based on the sound scientific foundations in all the sciences involved in the field of sports, the resultsof which helped to lay new foundations for the training process that make the work on track, and from these sciences is physiology, which has a great impact in achieving sports achievement by recognizing the nature of the work of the functional organs and their efficiencyand adaptations due to the nature and type of training practiced when For the athlete as well as the rationing of training loads according to the production of energy systems operating in the type and nature of the sports activity practiced.

Enemy activities are of all kinds of events that require great efforts by the athlete and these efforts are represented by the physical readiness and high level skilled as well as sound functional devices that work to sustain the physical efforts made during training or competitionby providing the necessary energy to continue working under great performance pressures, all of which need to plan training properly in accordance with the interconnection of scientific foundations between the science of sports training and the physiology of training to achieve the development of physical and skilled abilities. To achieve achievement, knowing what accompanies physical performance or the resulting functional indicators during the effort exerted requires great scientific efforts and gives the coach rich information through which to know the levels of athletes as well as the effectiveness of the training curriculum used in achieving the goals set for him and the occurrence of the necessary adjustments in the functional organs and this occurs as a result of the real effects of the training pregnancy used as the means by which these changes occur in the functional organs and thus reflect their resultson the functional organs. Both physical and skilled performance, so the legalization of trainingloads in accordance with the requirements of effectiveness or sports activity is different from the other due to the nature of the specificity and requirements of each sports activity.

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Regular training for long periods according to targeted training loads works to improve the training situation of the athlete as well as to make the required adjustments in the functional devices that help to meet the requirements of performance according to the practice activity, and the training systems used in enemy activities vary, including antenna, anaerobic and mixed, and the use of any of these systems depends on the nature of the requirements of each effectiveness and the nature of performance in them, and this would lead to adjustments in the functional devices when runners of short distances differ from the runners of short distances. Adaptations among long-distance runners, and this difference would be the basis for the legalization of training loads developed by the coach as it gives a clear perspective on the type and nature of training that will accelerate the process of development and upgrading the level of the athlete as scientifically based planning works to build a proper base for the athlete and build proper energy fitness by upgrading the work of working energy systems to equip the energy needed to perform at a high level as energy building is a biological process Inside the body, which is the metabolism to maintain the level of energy and this must be accompanied by the proper construction of training curricula to build and develop the athlete, the problem of researching the answer to the next question is what is the effect of aerobic and anaerobic exercises in some functional variables of short- and long-distance runners?, and the research aims to identify the impact of aerobic and anaerobic exercises in the maximum consumption of oxygen, pulse rate, respiratory frequency and energy discharged in short- and long-distance runners.

2. RESEARCH METHODOLOGY AND FIELD PROCEDURES:

2.1 Research approach:

The researcher used the descriptive method in a comparative manner to suit him and the nature of the research objectives.

2.2 Search sample:

The research sample included (5) short-distance runners and (5) long-distance runners from the applicant category representing clubs)

2.3 Means of collecting information, devices and tools used in research:

To reach the results of the research, the researcher used the following:

- Arab and foreign sources.
- Fit mate Pro Italian-origin fit mate device number (1).
- Chinese-origin Treadmill mobile device number (1).
- HP laptop made in China number (1).

2.4 Identify search variables:

Functional search variables are identified as follows:

- Maximum oxygen consumption (vo_2max): The highest speed of oxygen consumption during muscle work is meant to be using more than 50% of the body's muscles. Abu Ala:2003: 458)
- Pulse rate (HR): The number of heartbeats within one minute.
- Breathing rate (RF): The number of times it is exhaled and exhaled within one minute.

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- Energy spent (EE): Is the amount of calories that a person spends to meet the body's vital needs and life requirements, usually measured in kilojoules per minute or kilo calories or by the amount of oxygen consumption per liter per minute and divided intothree sections: energy spent during rest and energy spent during food consumption andthe last section during physical and sports activity. (Iyad Hamid and Hossam Mohammed: 2011: 218).

2.4.1 Testing of research indicators during effort: Test name: Test maximum oxygen consumption.

The goal of the test: to measure the maximum index of oxygen consumption, energy spent, heart rate and others during voltage.

Tools used: fitmate pro, Treadmill.

Performance method:

The laboratory climbs on the mobile device and wears the mask of the voltage test with provisions that do not enter the outer air into the lungs and breathe only from this mask and the belt of the pulse sensor is attached to the chest of the laboratory, and after the completion of these procedures the test bruce regulated with the synchronization of the operation of the fit met pro one minute after the start of the laboratory jogging for the purpose of protectingand correcting errors and then (vo_2max)) By gradually progressing from low to high and in the direct way of the Fit Met Pro by analyzing the air by mask by measuring this indicator.

Bruce Test was applied to each sample member, through continuous jogging by increasing the gradient by increasing the speed and height of the mobile device until the laboratory's fatigue was exhausted according to the stages of this test, andtable (1) shows the stages of the progression of the Bruce test.

Registration: Results automatically appear from the Fit Met Pro for each laboratory after the test is completed.

Table (1) Shows the stages or platform of bruce test when using a deviceTreadmill (Robert.A.Robergs&Scott O.Roberds, 2000,p330)

Bruce's mobile test			
LevelLevel	Time (minutes)Time (mins)	Speed km/h Speed (km/hr)	Altitude Grade (%)
1	0	2.74	10
2	3	4.02	12
3	6	5.47	14
4	9	6.76	16
5	12	8.05	18

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6	15	8.85	20
7	18	9.65	22
8	21	10.46	24

2.5 The main experience:

The test was applied to the search sample on Sunday and Monday, March 7, 2021, at 10:00 a.m., as the test was applied to the first research sample of short-distance runners, who were trained in anaerobic manner on Sunday, 7 March 2021, and the following day the test was applied to the second research sample, namely, long distance distances, which are trained in anaerobic manner, and a bors test was applied to the mobile device accordingto the following:

- Explain the method of testing on the sample members in a detailed andunderstandable manner.
- Give enough time to the laboratory to perform warm-up and prepare for the test.
- The provisions for wearing the breathing mask in such a way that the air is allowedto enter only from the dedicated port in the mask.
- Ensure that the sensor belt of the pulse is attached to the lab's chest in a way thatgives a correct reading when performing the test.
- The results of functional measurements from the Fit Met Pro were recorded in aform dedicated to this purpose.

2.6 Statistical means:

The researcher used the statistical bag (spss) to extract the results of the research using the following statistical means:

Computational medium, median, standard deviation, twisting coefficient, test (t) of independent samples.

Presentation, analysis and discussion of the results:

3.1 View the results of functional measurements of the two search samples:

Table (2) Statistical features of the two research groups

Functional indicators	Unit of measurement	xperimental totals	In the middle of my account .	nediary	Standard deviation	Twisting plants
VO2max	Ml/kg/min	Antenna	66.91	67.03	1.982	.110
		Anaerobic	47.57	47.76	1.833	.508
HR	D/D	Antenna	170.80	171.0	4.086	.590
		Anaerobic	184.20	185.0	1.923	.752
RF	Time/d	Antenna	49.40	49.0	2.073	.236
		Anaerobic	60.40	62.0	2.701	.578

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EE	**Kcal/h**	**Antenna**	1154.0	1153.5	6.204	.389
		Anaerobic	1220.8	1221.5	5.036	.446

3.2 Presenting, analysing and discussing the results of the differences between the two pilot groups:

Table (3) Computational circle values and standard deviations of functional search variablesfor the antenna and anaerobic groups and the calculated (t) value

Functional indicators	**Long-distance runners Air system**		**Short-distance runners Anaerobic system**		**Value (T) Calculated**	**Erro r rate**	**Statistical significance**
	In the middleof my account.	**Standard iation**	**In the middleof my account.**	**Standard iation**			
VO2max Ml/kg/min	66.91	1.982	47.57	1.833	16.017	0.00	Moral
HR D/D	170.80	1.923	184.20	4.086	6.634	0.00	Moral
RF Time/d	49.40	2.073	60.40	2.701	7.222	0.001	Moral
EE Kcal/h	1154.0	6.204	1220.8	5.036	18.705	0.00	Moral

Table (3) shows the values of the computational circles and functional standard deviations in question, and the same table shows the (t) values calculated for functional variables between the two experimental groups, as the results showed moral differences between the functional measurements of the two groups, meaning that there are moral differences between the two experimental groups, one of which is trained by the antenna system and the other by the anaerobic system in the functional variables under consideration.

The researcher attributes the moral differences in the variable maximum oxygen consumption (vo_2max) and in favor of the aerobic training group to the fact that the nature of training according to this system improves the functioning of the respiratory periodic system because the body depends on building energy based on oxygen entering the muscle cell through the lungs carried through the blood, as "it is known that the maximum consumption of oxygen reflects the ability of the air body and this responsibility is carried out by three basic organs in the body, namely the respiratory system. The nature of training for long-distance runners, which depends on large aerobic exercises and large attacks, has helped to develop thisimportant indicator as the muscles cannot continue to work without oxygen for more than ten seconds,

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while muscle work can continue for a greater period of time if the muscle is supplied with oxygen, i.e. the more severe the pregnancy or the period of muscle work, the faster oxygen consumption will be mentioned. 2000: 68) Training improves the amount (5-25%) of the maximum oxygen consumption by increasing cardiac propulsion, increasing muscle size and improving the function of the lungs by increasing the effectiveness of gas exchange between the hawe Pulmonary connections, capillaries, lack of pulse of comfort, increased heart size, increased hemoglobin ability to unionize with oxygen, and previously the differences in pulse variable during voltage indicating that the pulse rate during voltage was lower in long-distance runners And who adopt the air system in daily exercises with a greater percentage of anaerobic exercises as the natureof performance in these events requires muscles large amounts of oxygen-loaded blood and this works to make adjustments in the cavities of the heart, which makes them push more blood into the muscles, unlike what happens in the heart of the runner short distance, which is the adjustment in the wall of the heart muscle to increase the strength of constriction in the heart muscle to withstand significant pressure during performance The results showed an increase in the respiratory frequency rate of the anaerobic system training group, which is two short distance distances from the rate of self-frequency in the air training group, which is represented by long-distance runners, and the researcher explains why this indicator of the second group decreased to the use of regular oxygen training, which leads to a positive functional response in the respiratory system such as the expansion of the rib cage and increase the size of the cavity of the lungs and "Training increases the volume of breathing air by adding the volume of the reserve of the breath and exhalation, and there is the volume of air remaining that remains in the lungs and never comes out even with maximum exhalation" (Abu Ala: 2003: 282), which means that training according to the antenna system increases the volume of oxygen entering the lungs and increases the process of gas exchange and the economy of breathing movement due to the increase in vital capacity, which eventually leads to a decrease in the rate of breathing or respiratory frequency in the lungs. The player (Qassim Hassan Hussein, 1990, p. 134), and in the variable energy spent shows that the aerobic training group has consumed more energy than the anaerobic training group, and the researcher attributes this result to the fact that the energy spent in anaerobic voltage comes through sugars and a small part of fat and may not mention proteins and the systems (ATP and LC) work to provide the body with most of the required (ATP) (Necessary for the permanence of muscle work through the oxidation of klycogen anaphylaxis, while the source of energy in the aerobic events is also carbohydrates and fats, as the body at the beginning of performance depends on the klycogen in energy reconstruction (ATP) and continues for a long time and then fat becomes the main source after the depletion of klycogen in the muscles, and this process needsto drain great energy to complete chemical reactions within the muscle to produce ATP.

3. CONCLUSION

The nature of the types of training achieves different adjustments in the work of the functional organs responsible for the motor activity of the athlete, as the conditions of performance vary from effectiveness to another and this obliges the workers in the field of sports training to use methods and training methods working to achieve specific goals that will achieve for the athlete to improve the physical and functional level so that he can meet the

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requirements of performance during the competition, The researcher's findings showed that the maximum level of oxygen consumption in long-distance runners during the effort was higher than the short-distance runners, reflecting the possibility of a long-distance runner trained in aerobic training exercises to perform continuous physical exertion for a long time as a result of adjustments to his functional devices that provide energy through the anaerobic system, while the variables of pulse rate during voltage, respiratory frequency rate and energy discharged by runners Short distances and those who train with exercises with training loads are larger than long-distance runners and this difference was due to the nature of anaerobic training, which greatly adopts the processing of energy anaerobically, which requires a significant increase in the pulse rate in order to be able to deliver blood to muscle cells to get rid of residues from rapid muscle contractions and this work needs a large nutritional energy drained by the body to ensure the continuation of the interactions necessary to produce energy and the work of functional devices responsible for this motor activity.

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